tute. In 1860, Hoppe was appointed an extraordinary professor in the philosophical faculty of the University of Berlin. In 1861 (he had now assumed the name of Hoppe-Seyler) he was appointed to the chair of Applied Chemistry in the University of Tübingen, where he had as colleagues the botanist von Mohl, the physiologist Vierordt, the anatomist Leydig, the chemist Strecker, and the great physician Niemeyer.

It was whilst in Tübingen that Hoppe-Seyler published (1866-1870), under the title of "Medicinisch-Chemische Untersuchungen," a series of valuable papers by his pupils and himself, some of which will be always referred to by thorough students of physiological chemistry; such are the researches of Diakonow on lecithin, of Miescher on nuclein, and Hoppe-Seyler's own papers on hæmoglobin, its compounds and certain of its derivatives.

When, in 1872, after the conclusion of the Franco-German war, the German Government gave to Strasburg the new and splendidly-endowed Kaiser Wilhelm's Universität, Hoppe-Seyler was one of the distinguished men chosen to fill its chairs, being appointed to the only ordinary professorship of Physiological Chemistry in the German empire. Among those who were called with him, and who were destined to shed a brilliant lustre on the new academy, which had arisen Phœnix-like out of the ashes of the old Strasburg, were such men as Waldeyer, Recklinghausen, Leyden, Gusserow, Schmiedeberg and Flückiger. No wonder that Strasburg has already become one of the chief centres of research in Europe!

Amongst the laboratories—the so-called institutes—which are clustered around the Hospital of Strasburg, is the so-called Physiologisch-Chemische Institut, in which since his appointment Hoppe-Seyler has continued the work which he had begun in Berlin and in Tübingen, surrounded by pupils, many of whom—I shall merely name Baumann, Brieger, Kossel, and Thierfelder—have won for themselves honourable positions in contemporary science, and for their master the reputation of a great teacher, in the best sense of the term. Here Hoppe-Seyler worked until the very eve of his death. Leaving Strasburg apparently in the fulness of health and vigour to enjoy a few weeks of rest on his property by the shores of the Lake of Constance, Hoppe-Seyler was to be spared the misery of prolonged illness. Some sudden and unsuspected cardiac mischief brought to a standstill the life of a man of singularly great activity, intellectual as well as physical. He died on the forenoon of August 10, 1895.

Arthur Gamgee.

THE FUNERAL OF PASTEUR.

Amid signs of national sorrow, the funeral of Pasteur took place on Saturday last. France, more than any other nation, knows how to do honour to the memory of those who have contributed to her greatness, and by giving a national funeral, as well as taking the cost of it upon herself, she has once more shown the esteem in which she holds those who have devoted their lives to the increase of the world's knowledge and happiness. How very full was this expression may be gathered from the report of the *Times* correspondent at Paris. We read: "Quite a small army of infantry, marines, cavalry, artillery, and municipal guards, mounted and on foot; deputations from all the schools and learned societies; most of those who speak and of those who govern and command in the name of France, came to render homage to the stainless glory of this Frenchman, whose genius devoted its efforts to the whole of mankind, and who deserves the gratitude of the world, not merely for the labours which he accomplished but for the new paths which he opened to science by the fresh discoveries which he made for the benefit of mankind." Shortly after ten o'clock on Saturday morning, the troops and innumerable deputations, which had assembled in and near the Pasteur Institute, marched past before the coffin containing the body of the illustrious investigator. The funeral procession was then organised. General Saussier, surrounded by his staff, and followed by the first division of infantry, preceded the hearse, and behind him came a long line of deputations, many of which had wreaths in their centre. A number of wreaths were borne on litters, and others were carried on six cars, each drawn by a pair of horses.

"Along the route from the Rue Dutot to Notre Dame," says the *Times* correspondent, "the compact and silent crowd respectfully uncovered their heads as the hearse passed, and the two thousand soldiers and policemen, drawn up in line to keep the way clear, had absolutely nothing to do. The pall-bearers were M. Poincaré, M. Joseph Bertrand, M. Georges Perrot, Dr. Brouardel, M. Gaston Boissier, and M. Bergeron. After marching for an hour and a half along the left bank of the Seine, the procession reached the square of Notre Dame. The aspect of the Cathedral was most impressive. The presence of President Faure, the Grand Duke Constantine, Prince Nicholas of Greece, Cardinal Richard, the whole of the Diplomatic Corps, the Ministers, the Institute of France, the office-bearers of the Senate and the Chamber of Deputies, the red-robed Judges, the members of the University faculties, in orange, red, and crimson robes, and the other distinguished persons invited—all this display of official mourning was coupled with and yet eclipsed by the profound silence, the manifest grief. The immense crowd was a rare and impressive, if not a unique spectacle."

The Royal Society was represented by Mr. W. T. Thiselton-Dyer, C.M.G., Director of the Royal Gardens, Kew. At the final funeral, which will be held in connection with the Centenary of the Institute, on the 25th inst., several of the Officers and Fellows of the Society will be present, together with many delegates from other of our learned societies.

After the service in Notre Dame, the coffin containing Pasteur's remains was removed to a catafalque outside the Cathedral, and M. Poincaré delivered an oration before it, on behalf of the Government.

Thus does France venerate the memory of her noblest son. But France is not alone in her grief. The human race joins with her in mourning the loss of one who has done so much for humanity and science. The name of him to whom the world owes so much good is imperishable.

NOTES.

In July of this year, a special Parliamentary Committee, of which Mr. Rhodes, the Premier, was a member, sat in Cape Town to consider the advisability of beginning a systematic geological survey of the Colony. The Committee, after hearing evidence, recommended the House of Assembly to appoint a standing Commission which should take charge of the work, and become in the first instance responsible for its being efficiently carried out. Parliament having accepted this recommendation, the warrant appointing the Commission has been duly drawn up and signed by the Governor of the Colony. The following gentlemen compose the Commission: the Hon. I. X. Merriman, M.L.A.; Dr. Gill, Astronomer Royal; Dr. Muir, Superintendent General of Education; Mr. Charles Currey, Under-Secretary for Agriculture; and Mr. Thomas Stewart. The three first-mentioned are Trustees of the South African Museum, Cape Town, and it is intended that the geological staff shall have its headquarters in the new museum building, which is just approaching completion. In past years a great amount of detached work, chiefly of the nature of prospecting and reporting upon mineral occurrences, has been done in Cape Colony, while many European geologists have written papers dealing with the rocks, fossils, and in some cases the structural characters of different portions of the Colony which at various times they happened to have visited. The Commission intends, as one of its first duties, to have a bibliography of all such papers and reports published, but will at the same time have an organised systematic scheme of field work entered upon. A topographical map on a scale of two miles to an inch has already been published for about one-twelfth of the entire area of the Colony, and it is intended to utilise this for the geological details.

Dr. W. S. Church will deliver the Harveian oration before the Royal College of Physicians, on Friday, October 18.

Prof. Raoult, of Grenoble University, has been awarded the prize of twenty thousand francs given biennially by one of the bodies constituting the Institute of France, and awarded this year by the Academy of Sciences.

We regret to notice the death of Prof. A. von Bardeleben, the eminent surgeon, and for many years one of the Presidents of the Berlin Medical Society. The death is also announced of Baron Felix Larrey, member of the Paris Academy of Medicine, and author of a number of works on military surgery.

The *Bulletin* of the Royal Gardens, Kew, announces that Sir Joseph Hooker has presented the Gardens with a replica of a portrait of the late Dr. T. Thomson, F.R.S. Dr. Thomson was the first botanist to enter the Karakoram mountains, and was for some time Director of the Calcutta Botanic Gardens.

During the Leyden Zoology Congress a small volume, entitled "Guide Zoologique de la Hollande," was presented to the members. This little book, containing a number of photographs, was compiled by the General Secretary to the Congress, Dr. Hoek, and is full of information on the zoological laboratories, the museums, the zoological station and the zoological gardens, as well as concerning the study and the teaching of zoology in Holland. Several chapters are, moreover, devoted to the fauna of the country.

At last week's meeting of the Pharmaceutical Society of Great Britain, the Hanbury Medal was presented to Dr. A. E. Vogl, Professor of Pharmacology in the University of Vienna, through Count Clary, Prof. Vogl being unable to attend in person. The medal is awarded biennially in accordance with the condition of the Hanbury Memorial Fund, and the award rests with the Presidents of the Pharmaceutical Society, Linnean Society, Chemical Society, and the British Pharmaceutical Conference. The first presentation was made in 1881, the recipient being Prof. Flückiger.

At the Royal Microscopical Society, on Wednesday, October 16, the following papers will be read:—"On the Division of the Chromosomes in the Pollen Mother-Cell of Lilium," by Prof. J. B. Farmer; "New and Critical Fungi," by G. Massee; "A Fluorescent Bacillus," by F. J. Reid.

The inaugural lecture of the newly-instituted "Course of Scientific Instruction in Hygiene and Public Health" at Bedford College for Women, was delivered by Dr. Louis Parkes on Saturday afternoon, October 5. The course aims at promoting systematic instruction in hygiene and all those allied branches of science necessary to a thorough knowledge of sanitation and laws of health, and so qualifying women to become teachers and lecturers, and inspectors of workshops and factories where female labour is employed.

A meeting of the Institution of Mechanical Engineers will be held on Wednesday, October 23, and Thursday, October 24, at the Royal United Service Institution, Whitehall. The chair will be taken by the President, Prof. Alexander B. W. Kennedy, F.R.S., and the following papers will be read and discussed, as far as time permits:—"The Electric Lighting of Edinburgh," by Mr. Henry R. J. Burstall; "Report on the Lille Experiments upon the Efficiency of Ropes and Belts for the Transmission of Power," translated by Prof. David S. Capper; "Observations on the Lille Experiments upon the Efficiency of Ropes and Belts for the Transmission of Power," also by Prof. Capper.

The death of Moritz Wilkomm, the eminent botanist and geographical explorer, is announced in the *Geographical Journal*. Of his life we read:—"Born in 1821, at Herwigsdorf, in the kingdom of Saxony, after 1841 he studied medicine and natural science at Leipzig. In 1844 he for the first time visited the Pyrenean peninsula, which he subsequently traversed so often, sometimes by the year together, making thorough investigations into the botanical, geognostical, and geographical relations of the country. After having, in 1852, gained some experience as teacher of botany at Leipzig, and having been called thence first to Tharandt, and afterwards, in 1868, to Dorpat, he occupied the chair of Botany at the German University at Prague from 1873 until the receipt of his pension in 1892, being at the same time Director of the Botanical Garden in that city. He did much good work by his rich botanical collections, principally from Spain and the Balearic Isles, as well as by his special botanical works dealing especially with the descriptive side of the science; whilst as a geographer he did lasting service, not only in connection with the geography of plants—in particular in South-West and Central Europe—but also by his comprehensive geographical description of Spain and Portugal; and, above all, he threw light on the geography of Austria by his excellent work on the Böhmerwald (1878), which region he was the first to throw open to science in its most inaccessible parts, still at the time clothed with primeval forest."

With reference to the letter by Mr. Pillsbury on "Colour Standards" (Nature, August 22, p. 390), Mr. J. W. Lovibond writes from Salisbury:—"In justice to myself, may I be allowed to point out that the difficulties named no longer exist, since it remains as an experimental fact that the solution of every position which Mr. Pillsbury describes as desirable and lacking is now a matter of everyday routine in many laboratories and manufactories. . . . Every sensation, whether of light or colour, which can be differentiated by the vision can be matched by means of the Tintometer Standard Glasses, and defined by means of a system of colour terms; the colour sensation itself can be reproduced at any future time by simply using the matching glasses. The operation of matching a colour is so easy that in those factories where frequent changes of colour require noting, or where it is necessary to work up to a given colour, an intelligent workman is found competent to effect them."

The current number of *Himmel und Erde* contains the concluding part of two interesting articles on scientific balloon ascents, by Dr. R. Süring, of Potsdam. The author briefly reviews all ascents since that by Jeffries and Blanchard on November 30, 1784, and shows that relatively little use has been made of the observations, probably because they have not always been free from objection, or from the fact that most ascents have been of an isolated character. The principal exceptions, among the older ascents, are the celebrated voyages of Welsh and Glaisher, and more recently those made by the Bavarians and

Russians; the latter dealing more especially with wind conditions in high and low barometric pressures. The German Society for the promotion of scientific balloon ascents, under the patronage of the Emperor, will probably obtain important results, and solve several open questions relating to cloud formation, and atmospheric electricity under various hygrometric conditions of the atmosphere.

A SUSPENSION for physical instruments free from the vibrations of the laboratory would be an inestimable boon to physicists, especially in crowded cities. At Leyden University, Prof. Einthoven mounted his delicate capillary electrometer on an iron plate floating on mercury. This device was exceedingly successful, although somewhat cumbersome and bulky, and he was thus enabled to take a photographic record of the instrument magnified 800 times. Sir G. B. Airy was in the habit of placing his artificial horizon upon a table suspended by caoutchouc bands attached to another table similarly suspended, the arrangement being repeated three times. This, however, was even more cumbersome. Now Herr W. H. Julius, in *Wiedemann's Annalen,* describes a contrivance which is both simple and effective. It consists of a small circular table suspended by three vertical wires about 6 or 8 feet long, the ends of which form the points of an equilateral triangle. A movable weight is attached to a rod projecting downwards from the centre of the table. It can be clamped in any position, so as to bring the centre of gravity of the table and the instrument into the plane of the table itself. Any lateral displacement of the upper ends of the wire will start waves down the wires, which will arrive at the table simultaneously, but will only affect it perceptibly when the period of the disturbance coincides with the period of oscillation of the table about the point of suspension. Even then the axis of the table is always strictly vertical. To clamp the oscillations peculiar to the suspension the author attached little vanes, dipping into oil or water, to the table. With a rough preliminary apparatus constructed in this manner, the author succeeded in reducing the vibrations to one-tenth of their original amplitude.

THAT sedimentation plays an important part in the purification of water, was shown as long ago as the year 1886 by Dr. Percy Frankland in the case of his laboratory experiments on the removal of micro-organisms from water. That it is a factor of great importance in the storage of water in reservoirs, was also shown by him in his investigations at the London water-works; but quite recently Dr. H. J. van 't Hoff has indicated how this now recognised process of sedimentation may be taken advantage of in the abstraction of tidal water for purposes of water-supply. It appears that the city of Rotterdam derives its water-supply from the river Maas, and that the Company's intake is situated within the tidal area of the river; the water is, however, only abstracted at particular times, *i.e.* two hours after high-water has been reached. During this period the river is at rest, and sedimentation can proceed unhindered, and Dr. van 't Hoff estimates that at least 50 per cent. of the bacteria present are eliminated during this time of comparative stagnation. Unlike the city of Hamburg, which before and during the great cholera epidemic abstracted tidal water from the river Elbe, and distributed it in its raw condition in Rotterdam, the Maas water is submitted to filtration before delivery. In consequence, however, of a very large demand on the resources of the water-works, the rate of filtration is considerably higher than it should be; and this fact, combined with the unpleasant circumstance that the city disposes of its refuse by conducting it into the river, would naturally lead us to anticipate a bad bacterial filtrate. Dr. van 't Hoff does not, unfortunately, cite any figures for the filtrate, but states that "the very satisfactory bacteriological results which obtain at the Rotterdam water-works" are doubtless in great part a consequence of the improvement which takes place in this tidal water through sedimentation, rendering the raw water comparatively easy to deal with, whilst its microbial contents after the stagnation period average only from 4,000 to 10,000 per cubic centimetre, a remarkably small number for a polluted water.

MESSRS. OLIPHANT, ANDERSON, AND FERRIER are about to issue a new popular science series for children, under the title of "Science Talks to Young Thinkers." The first volume is "Nature's Story," by Mr. H. Farquhar.

THE last part of "The Natural History of Plants," by Kerner and Oliver, which Messrs. Blackie have for some months been issuing, has just appeared, and the whole of that excellent work can therefore now be obtained in volumes.

MESSRS. CASSELL AND CO. have issued the first part of a "new and revised edition" of Sir Robert Ball's "Story of the Heavens." We hope that succeeding parts have been brought up to the present state of knowledge, so that the edition will really be a revised one.

SEVERAL years ago it was intimated by a circular that Dr. Buchanan White was engaged in the preparation of a Flora of Perthshire, which he hoped to issue after a brief period of time. Dr. White's death, last December, prevented its issue by himself, but he left it in a state that permits of its immediate publication; and we are glad to notice the announcement that the book is to be issued on behalf of the Perthshire Society of Natural Science. Prof. Trail, F.R.S., has undertaken to edit it, and to preface it with a sketch of the author's life and scientific work.

A SERIES of five simply-worded books on wild flowers, by Dr. M. C. Cooke, has been published by Messrs. T. Nelson and Sons. The volumes are entitled "Down the Lane and Back," "Through the Copse," "A Stroll in a Marsh," "Around a Cornfield," and "Across a Common." Written in an attractive conversational style, and with scanty use of the "hard words" which children, and even those of older growth, always associate with the study of nature, the books are well suited to the juvenile public for whom they are intended.

WE are glad to note that the Harveian oration delivered by Dr. Lauder Brunton before the Royal College of Physicians last October, and printed in full in these columns at the time, has been published in the form of a handy volume by Messrs. Macmillan and Co. It will be remembered that the subject of the oration was "Modern Developments of Harvey's Work"; and those who know how well and fully Dr. Brunton treated his subject, will be gratified at the publication of the oration in a convenient form. The volume is dedicated to Sir J. Russell Reynolds, the President of the Royal College of Physicians.

WE have received the second part of Mr. J. W. Taylor's "Monograph of the Land and Freshwater Mollusca of the British Isles," from Messrs. Taylor Brothers, Leeds, and are pleased to see that the high standard of excellence to which we called attention in our notice of the first part is well sustained. The descriptive text is clear, and generally accurate, while the paper, print, and illustrations (coloured and otherwise) are all praiseworthy. The present part practically completes the consideration of the shell, and the next issue will be devoted to the animal and its organisation.

THE "Zoologisches Adressbuch," which R. Friedländer and Sohn, Berlin, have edited and published in connection with the Deutsche Zoologische Gesellschaft, will prove of very great assistance to workers in all parts of the world. The volume contains the names and address of zoologists, anatomists, physiologists, and zoo-palæontologists of all countries. The classification is according to countries, the towns of which are arranged (with a few exceptions) in alphabetical order, while the names follow the same order. Each name is followed by a full address, and by an indication of the special branch or branches of study in which the person it designates is interested. To give an example of the scope of the contents, it may be said that under London we find the names of the professors and assistants in the zoological and kindred departments in the various colleges and medical schools; the staffs of the departments of zoology and geology in the Natural History Museum; some of the members of the Geological Survey of England and Wales; a list of the members of the Zoological Society; the names and places of meeting of a number of London and suburban scientific societies interested more or less in zoology; and lists of draughtsmen, opticians, publishers, and of taxidermists and dealers in animals. In some cases the lists are much fuller than in others, owing probably to the fact that some colleges and institutions furnished the publishers with more detailed lists than others. But though a few names are omitted from the places where one first looks for them, they can in most cases be found somewhere in the volume. Very valuable is an index of the names arranged in groups according to the subjects especially studied, and a geographical index. And, finally, the personal index at the end of the volume renders it possible to find the name, address, and special work of any zoologist entered in the work in a few moments. It is well known that the Germans excel in producing directories of the kind before us, and, so far as we can make out, the present work will sustain their reputation. Being international, the directory will help to bring together observers accumulated in widely separated regions of our globe, and so will lead to a better knowledge of the world's fauna. We congratulate Messrs. Friedländer upon the enterprise they have shown in preparing and producing such a useful work; and we hope the time is not far distant when the designations of students and investigators in the domain of physical science will be brought together in a similar directory.

THE additions to the Zoological Society's Gardens during the past week include a Black Ape (*Cynopithecus niger*) from Celebes, presented by Mr. Frank Greswolde Williams; a Rhesus Monkey (*Macacus rhesus*, ♂) from India, presented by Mr. H. Small; a Bonnet Monkey (*Macacus sinicus*, ♀), a Macaque Monkey (*Macacus cynomolgus*, ♀) from India, presented by Mrs. Lionel Smith; a White-tailed Ichneumon (*Herpestes albicauda*), two Blotched Genets (*Genetta tigrina*) from Natal, presented by Mr. W. Champion; a Cape Hyrax (*Hyrax capensis*), two Suricates (*Suricata tetradactyla*) from South Africa, presented by Mr. J. E. Matcham; two Norwegian Lemmings (*Myodes lemmus*) from Norway, presented by Mrs. Haig Thomas; a Passerine Parrakeet (*Psittacula passerina*) from Brazil, a Silky Cow-Bird (*Molothrus bonariensis*), a Red-crested Cardinal (*Paroaria cucullata*) from South America, presented by Mr. R. Norton; two Common Kingfishers (*Alcedo ispida*), British, presented by Mr. J. A. Clark; a Passerine Parrakeet (*Psittacula passerina*) from Brazil, a Tuberculated Iguana (*Iguana tuberculata*) from the West Indies, two Common Teguexins (*Tupinambis teguexin*) from South America, deposited.

OUR ASTRONOMICAL COLUMN.

MEASUREMENT OF PLANETARY DIAMETERS.—In a paper giving particulars of measurements of the polar diameter of Mars (*Astronomical Journal*, No. 354), Prof. Campbell gives an interesting summary of the conditions of planetary measures in general. He points out that measurements of diameter are affected by a variety of errors, among them being spherical and chromatic aberration, imperfect atmospheric conditions, irradiation, diffraction, and imperfect focus, all of which tend to increase the apparent diameter of the object; while, in addition, personal equation and accidental errors may also affect the results. The effects of spherical and chromatic aberration, as well as of diffraction, may be regarded as constant throughout a series of measures of any given object. Differential refraction can be satisfactorily corrected for, but the irregular refraction caused by the unsteadiness of the atmosphere, and resulting in "poor seeing," may produce very large errors indeed. The apparent increase of diameter due to irradiation may be regarded as sensibly constant with any given telescope, eyepiece, planet, and background. Imperfect focus may produce considerable and variable errors; in the 36-inch Lick telescope, an error of a thousandth of an inch in focussing increases the diameter of a planet by 0″·02. Experiments as to the best method of procedure were made by Prof. Campbell in June and July, 1894, with the result that the following programme was adopted in the case of Mars: (*a*) All the observations were made with the sun above the horizon, and the advantages of a bright sky background were very marked; it was believed to reduce all the errors, except possibly that of personal equation. (*b*) Observations were only made in a tranquil atmosphere. (*c*) The same eyepiece was used throughout. (*d*) An eyepiece cap with a very small aperture was employed. (*e*) The observer's eyes were always similarly situated with respect to the threads of the micrometer. (*f*) The micrometer threads were always placed parallel to the great circle passing through Mars and the sun. (*g*) The micrometer threads were placed directly upon the opposite limbs of the planet.

Following this programme, and adopting Young's value of 1/219 for the polar compression, the most probable polar diameter of Mars, at distance unity, was found to be 9″·25 + 0″·012, while the equatorial diameter resulting from the measures was 9″·30.

THE CRATERS ON THE MOON.—Much has been learnt about the configurations of the lunar surface since the idea of examining very greatly enlarged photographs came into practice. It was only natural, however, that many interested in the subject should have looked upon the interesting results of Dr. Weinek with scepticism, for it was hard to believe that such detail structure could be so perfectly secured on the photographic plates. Such doubts as to their existence were somewhat increased by the fact that many details were invisible to eye observations, or at any rate were thought to be, but the fact was not sufficiently grasped that the photographic plates showed only the detail as it appeared at the moment of the exposure, which might have differed considerably from that which preceded it or, followed it by a few seconds.

Every confidence is now placed in the photographic records, and under suitable and similar observing conditions the eye should be ably to verify them directly. M. C. M. Gaudibert, in *Astr. Nach.* No. 3310, tells us of his discovery, with an instrument of 260 m.m. aperture, by eye observations alone, of a small crater only 800 metres in diameter. It lies on the top of the central mountain of Albategnius. This crater has been subsequently found by Dr. Weinek on a negative taken by MM. Loewy and Puiseux 1894, February 13, 4h. 6m. Mean Time Paris.

A diligent search by M. Gaudibert has also enabled him to secure the necessary observational conditions to see the two small craters discovered by Weinek near the crater and to the east of the Rephées mountains.

SUGGESTION FOR ASTRONOMICAL RESEARCH.—Dr. Isaac Roberts draws attention to a piece of useful astronomical work which may be performed by those who take a practical interest in the subject, namely, to determine what changes, if any, have taken place among the stars in the regions photographed by him at intervals during the past eight years. In the first instance it will only be necessary to compare the earlier photographs published in his well-known "Photographs of Stars, Star Clusters, and Nebulæ" with the new series now appearing in *Knowledge*; but arrangements are being made which will enable investigators to refer to glass positives, or the negatives themselves, to settle any doubtful points. The photographs being enlarged to the same scale, comparative measurements may readily be made by means of a *réseau* ruled on glass, and a transparent protractor will enable position angles to be determined. The scale of the photographs is such that any change of position exceeding three seconds of arc may be detected by careful measurements. "Thus, a system of astronomical research would be inaugurated, that must eventually add largely to existing knowledge."